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FEARER, MARK D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/698,060	AULTMAN ET AL.	
	Examiner	Art Unit	
	Mark D. Fearer	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) *19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Applicant's claim for domestic priority under 35 U.S.C. 119e is acknowledged.

Claim Objections

Claim 19 is objected to for grammatical errors. Corrective action required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Padovano (US 6606690 B2) in view of Nishimura et al. (US 7162597 B2).

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Consider claim 1. Padovano discloses a first network and a second network in communication through a third network (("The present invention is directed to a system and method for interfacing a storage area network (SAN) with a first data communication network.") column 1 lines 55-57 ("The NAS server configures access to the second portion of the plurality of storage devices to at least one second host coupled to the second data communication network.") column 2 lines 31-34); the first network comprising: a first processor layer; a first storage area network layer in communication with the first processor layer (("SAN storage manager 404 receives the responses from first network interface 406, and processes them accordingly.") column 17 lines 46-47); and a first storage layer in communication with the first storage area network layer (("FIG. 3A shows an example embodiment of a storage appliance 108, which includes a SAN server 302. SAN server 302 is coupled between first data communication network 118 and second data communication network 116. SAN server 302 allocates storage of SAN 120 to hosts 102, 104, and 106, on an individual or group

basis, as shown in FIG. 1. SAN server 302 receives read and write storage requests from hosts 102, 104, and 106, and processes and sends these storage requests to the applicable storage device(s) of storage devices 110, 112, and 114 in SAN 120.") column 12 lines 51-60); the second network comprising: a second processor layer (("SAN storage manager 404 receives the read and write storage requests from second network interface 402, and processes them accordingly.") column 17 lines 25-27); a second storage area network in communication with the second processor layer; and a second storage layer in communication with the second storage are network layer; wherein, the first and second storage layers are shared by the first and second networks via the third network (("In this manner, first network interface 508 issues the received read/write storage request to the SAN server 302. First network interface 508 also receives responses to the read/write storage requests from SAN server 302 on second data communication network 116. The responses may include data stored in the storage devices of SAN 120. First network interface 508 outputs the responses to NAS file manager 512.") column 19 lines 13-20); and wherein, information stored in the first storage layer is transferred to the second storage layer via the third network under the control of the first processor layer (("Second network interface 502 receives read and write storage requests from hosts attached to third data communication network 208. The requests relate to storage exported to third data communication network 208 by NAS server 304. Second network interface 502 also sends responses to the read and write storage requests to the hosts.") column 18 lines 66-67 and column 19 lines 1-4). However, Padovano fails to disclose an enterprise data backup and recovery system.

Nishimura et al. discloses a backup storage unit for storing backup data for the first data and the second data (("FIG. 1 is a diagram showing an example functional configuration for a backup system 10 according to the embodiment of the present invention. The backup system 10 comprises: a first storage unit 130 for storing data in a first storage form; a second storage unit 120 for storing data in a second storage form; a backup storage unit 110 for storing backup data for the data stored in the first storage unit 130 and in the second storage unit 120; a storage form converter 140 for converting into data in a second storage form the data in the first storage form stored in the first storage unit 130, and for storing in the second storage unit 120 the data in the second form; and a backup manager 100 for copying to the backup storage unit 110 the data in the second storage form stored in the second storage unit 120.") column 2 lines 63-67 and column 3 lines 1-9).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a backup system as taught by Nishimura et al. with a layered SAN as taught by Padovano for the purpose of enterprise data archiving.

Consider claim 2, and as applied to claim 1 above. Padovano, as modified by Nishimura et al., discloses a system wherein a first processor layer comprises: a first media server; a first application storage manager server in communication with first media server via a first local area network (("FIG. 4 illustrates an exemplary block diagram of a SAN server 302 (read as a media server), according to an embodiment of the present invention. SAN server 302 comprises a first network interface 406, a second

network interface 402, a SAN storage manager 404, a SAN server interface 408, and an operating system 410.") column 16 lines 25-30); and a first client in communication with the first media server via the first local area network (("The NAS implementation is capable of providing data to a large number of clients.") column 3 lines 24-25); wherein the information is transferred to the first media server and to the first storage layer (("First network interface 406, second network interface 402, and SAN server interface 408 each include one or more host bus adaptors (HBA), network interface cards (NICs), and/or other adaptors/ports that interface the internal architecture of SAN server 302 with first data communication network 118.") column 16 lines 36-41).

Consider claim 3, and as applied to claim 2 above. Padovano, as modified by Nishimura et al., discloses a system wherein a first media server controls the transfer of information to a first storage layer (("The present invention is directed to a system and method for interfacing a storage area network (SAN) with a first data communication network. One or more hosts coupled to the first data communication network can access data stored in one or more of a plurality of storage devices in the SAN.") column 1 lines 55-59).

Consider claim 4, and as applied to claim 2 above. Padovano, as modified by Nishimura et al., discloses a system wherein a first application storage manager server controls the transfer of the information to a first storage layer. (("... a SAN server as described herein may be implemented in a computer system, application-specific box, or other device.") column 16 lines 18-20 ("A first SAN server is configured to be

coupled to the plurality of storage devices in the SAN via a first data communication network.") column 2 lines 40-42)

Consider claim 5, and as applied to claim 2 above. Padovano, as modified by Nishimura et al., discloses a system wherein a first application storage manager server controls the transfer of the information to a second storage layer. (("The first SAN server is configured to be coupled to a second data communication network.") column 2 lines 42-43).

Consider claim 6, and as applied to claim 2 above. Padovano, as modified by Nishimura et al., discloses a system wherein a first storage layer further comprises: a first disk storage array in communication with a first application storage manager server for storing information ((" A SAN appliance or device as described elsewhere herein may be inserted into network 800, according to embodiments of the present invention. For example, a SAN appliance 818 may to implemented to provide the required connectivity between the storage device networking (disk arrays 820, 822, 824, 828, 830, and 832) and hosts and servers 814 and 816, and to provide the additional functionality of SAN and NAS management of the present invention described elsewhere herein. Hence, the SAN appliance interfaces the storage area network, or SAN, which includes disk arrays 820, 822, 824, 828, 830, and 832, hub 826, and related networking, with servers 814 and 816.") column 8 lines 10-22); and a first backup library in communication with the first application storage manager server for storing the information (("For Unit example, SCSI I/O commands are sent to a target and executed by a logical unit within that target. A SCSI physical disk typically has a single logical

unit. Tape drives and array controllers may incorporate multiple logical units to which I/O commands can be addressed. Typically, each logical unit exported by an array controller corresponds to a virtual disk. LUN Logical Unit Number; The identifier of a logical unit within a target, such as a SCSI identifier. NAS Network Attached Storage; Storage elements that connect to a network and provide file access services to computer systems. A NAS storage element typically consists of an engine, which implements the file services, and one or more devices, on which data is stored. Point-to-A dedicated Fibre Channel connection between two point devices. Private A free-standing Arbitrated Loop with no fabric attachment. loop Public loop An Arbitrated Loop attached to a fabric switch. RAID Redundant Array of Independent Disks. SCSI Small Computer Systems Interface; both a protocol for transmitting large blocks of data and a parallel bus architecture. SCSI-3 A SCSI standard that defines transmission of SCSI protocol over serial links. Storage Any device used to store data; typically, magnetic disk media or tape. Switch A device providing full bandwidth per port and high-speed routing of data via link-level addressing. Target Typically a disk array or a tape subsystem on a Fibre Channel network.") column 6 lines 19-44).

Consider claim 7, and as applied to claim 6 above. Padovano, as modified by Nishimura et al., discloses a system wherein a first disk storage array is in communication with a first backup library via a fiber channel (("Fibre channel-to-SCSI bridges may be used to allow SCSI devices to interface with fibre channel hubs and switches, and other fibre channel-ready devices. One or more of disk arrays 820, 822, 824, 828, 830, and 832 may instead be alternative types of storage devices, including

tape systems, JBODs (Just a Bunch Of Disks), floppy disk drives, optical disk drives, and other related storage drive types.") column 8 lines 51-58).

Consider claim 8, and as applied to claim 6 above. Padovano, as modified by Nishimura et al., discloses a system wherein a first disk storage array is in communication with a first application storage manager server via a fiber channel (("SAN server 302 comprises a first network interface 406, a second network interface 402, a SAN storage manager 404, a SAN server interface 408, and an operating system 410. FIG. 4 also shows an administrative interface 412, that is coupled to SAN server 302 through GUI communication link 426. Administrative interface 412 may be coupled to SAN server 302 if SAN server 302 is a primary SAN server for a SAN appliance (read as array).") column 16 lines 27-34).

Consider claim 9, and as applied to claim 6 above. Padovano, as modified by Nishimura et al., discloses a system wherein the first backup library is in communication with the first application storage manager server via a fiber channel (("Arbitrated A shared 100 MBps Fibre Channel transport supporting up Loop to 126 devices and 1 fabric attachment. Fabric One or more Fibre Channel switches in a networked topology. HBA Host bus adapter; an interface between a server or workstation bus and a Fibre Channel network. Hub In Fibre Channel, a wiring concentrator that collapses a loop topology into a physical star topology. Initiator On a Fibre Channel network, typically a server or a work- station that initiates transactions to disk or tape targets. JBOD Just a bunch of disks; typically configured as an Arbitrated Loop segment in a single chassis. LAN Local area network; A network linking multiple devices in a single geographical

location. Logical The entity within a target that executes I/O commands. For Unit example, SCSI I/O commands are sent to a target and executed by a logical unit within that target. A SCSI physical disk typically has a single logical unit. Tape drives and array controllers may incorporate multiple logical units to which I/O commands can be addressed. Typically, each logical unit exported by an array controller corresponds to a virtual disk. LUN Logical Unit Number; The identifier of a logical unit within a target, such as a SCSI identifier. NAS Network Attached Storage; Storage elements that connect to a network and provide file access services to computer systems. A NAS storage element typically consists of an engine, which implements the file services, and one or more devices, on which data is stored. Point-to- A dedicated Fibre Channel connection between two point devices. Private A free-standing Arbitrated Loop with no fabric attachment. loop Public loop An Arbitrated Loop attached to a fabric switch. RAID Redundant Array of Independent Disks. SCSI Small Computer Systems Interface; both a protocol for transmitting large blocks of data and a parallel bus architecture. SCSI-3 A SCSI standard that defines transmission of SCSI protocol over serial links. Storage Any device used to store data; typically, magnetic disk media or tape. Switch A device providing full bandwidth per port and high-speed routing of data via link-level addressing. Target Typically a disk array or a tape subsystem on a Fibre Channel network. TCP Transmission Control Protocol; TCP enables two hosts to establish a connection and exchange streams of data; TCP guarantees delivery of data and also guarantees that packets will be delivered in the same order in which they were sent. Topology The physical or logical arrangement of devices in a networked configuration.

UDP User Datagram Protocol; a connectionless protocol that, like TCP, runs on top of IP networks. Unlike TCP/IP, UDP/IP provides very few error recovery services, offering instead a direct way to send and receive datagrams over an IP network. WAN Wide area network; a network linking geographically remote sites.") column 6 lines 7-54).

Consider claim 10, and as applied to claim 1 above. Padovano, as modified by Nishimura et al., discloses a system comprising a first switch in communication with the first storage area network layer for transferring the information to a third network (("Storage appliance 210 includes a SAN server 302 and a NAS server 304. SAN server 302 is coupled between first data communication network 118 ...") column 13 lines 4-7 ("... additional switches and NAS servers in storage appliance 210 may be coupled to third data communication network 208 through links.") column 15 lines 37-39).

Consider claim 16, and as applied to claim 1 above. Padovano, as modified by Nishimura et al., discloses a system comprising a second switch in communication with a second storage area network layer for receiving information from a third network. (("Switch 702b is coupled to redundant SAN server 302b. Primary NAS server 304a, redundant NAS server 304b, and switch 702b are coupled to redundant second data communication network 116b by switch 702b. Switch 702b allows for communication between redundant SAN server 302b and primary and redundant NAS servers 304a and 304b, and between SAN server 302b and hosts attached to redundant second data communication network 116b. Primary NAS server 304a and redundant NAS server 304b each include two interfaces, such as two HBAs, that allow each of them to be coupled with both of primary and redundant second data communication network 116a

and 116b. Additional NAS servers and switches may be coupled in parallel with NAS servers 304a and 304b and switches 702a and 702b. In further embodiments, additional switches and NAS servers in storage appliance 210 may be coupled to further redundant networks, or to networks coupled to additional hosts. Primary NAS server 304a is coupled to primary third communications link 602. Redundant NAS server 304b is coupled to redundant third communications link 604. In further embodiments, additional switches and NAS servers in storage appliance 210 may be coupled to third data communication network 208 through links.") column 15 lines 15-39).

Consider claim 17, and as applied to claim 1 above. Padovano discloses a first network comprising: a first processor layer; a first storage area network layer in communication with the first processor layer; and a first storage layer in communication with the first storage area network layer. However, Padovano fails to disclose a system wherein a first network is a network based backup and recovery network. Nishimura et al. discloses a backup manager wherein a first storage unit stores first data (("A backup manager for copying into the backup storage unit the first data ... (Entry 2) A backup system according to Entry 1, wherein the first storage unit stores the first data using a block form, which is a storage form that can be accessed by directly designating a storage location; ...") column 8 lines 36-42).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a backup manager wherein a first storage unit stores first data as taught by Nishimura et al. with a first network comprising: a first processor layer; a first storage area network layer in communication

with the first processor layer; and a first storage layer in communication with the first storage area network layer as taught by Padovano for the purpose of distributed storage resource management.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Padovano (US 6606690 B2) as modified by Nishimura et al. (US 7162597 B2) and in further view of Mann et al. (US 6963590 B1).

Consider claim 11, and as applied to claim 1 above. Padovano, as modified by Nishimura et al., discloses a system wherein a first network and a second network communicate via a third network. However, Padovano, as modified by Nishimura et al., fails to disclose a system wherein a third network is an asynchronous transfer mode network. Mann et al. discloses a network of the IEEE-1394 standard, which supports both isochronous transport and asynchronous transport (("Network 112 may be a network having an architecture in accordance with the IEEE 1394-1995 Specification. (Such a network will hereinafter be referred to as an "IEEE-1394" network. An IEEE-1394 network may also be referred to in the art as FireWire.TM., which is a trademark of Apple Computer, Inc.) IEEE-1394 is a serial bus, and supports both isochronous transport and asynchronous transport. Nodes on the bus are addressable, and the data transfer is packetized. (Details of the IEEE-1394.TM. specifications, including the physical layer and link layer protocols may be found in the IEEE Standard 1394-1995, Copyright, Institute of Electrical and Electronic Engineers (IEEE), which is hereby incorporated herein by reference.") column 4 lines 61-67 and column 5 lines 1-6).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a network of the IEEE-1394 standard, which supports both isochronous transport and asynchronous transport as taught by Mann et al. with a system wherein a first network and a second network communicate via a third network as taught by Padovano, as modified by Nishimura et al., for the purpose of efficient asynchronous data replication.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Padovano (US 6606690 B2) as modified by Nishimura et al. (US 7162597 B2) and in further view of Johnson et al. (US 20020116452 A1).

Consider claim 12, and as applied to claim 1 above. Padovano, as modified by Nishimura et al., discloses a system wherein a second storage layer comprises a second disk storage array (("When a NAS server receives a LUN:Enable string, it configures that LUN from each interface with second data communication network 116. For instance, first network interface 508 may include two HBAs that each interface with second data communication network 116. Each HBA is configured into the NAS server's operating system, creating two new disk devices. The first disk device refers to the LUN on the first HBA, and the second disk device refers to the same LUN on the second HBA.") column 25 lines 14-22); However, Padovano, as modified by Nishimura et al., fails to disclose a second processor layer comprising: a second media server, a second application storage manager server, or a second backup library. Johnson et al. discloses a second media server (("For example, the content flow path of FIG. 1B illustrates an exemplary application in which the content is contained in content sources

1090 and/or 1100 that are coupled to the storage processing engine 1040. However as discussed above with reference to FIG. 1A, remote and/or live broadcast content may be provided to the content delivery system from the networks 1020 and/or 1024 via the second network interface connection 1023. In such a situation the content may be received by the network interface engine 1030 over interface connection 1023 and immediately re-broadcast over interface connection 1022 to the network 1020. Alternatively, content may be proceed through the network interface connection 1023 to the network transport engine 1050 prior to returning to the network interface engine 1030 for rebroadcast over interface connection 1022 to the network 1020 or 1024. In yet another alternative, if the content requires some manner of application processing (for example encoded content that may need to be decoded), the content may proceed all the way to the application engine 1070 for processing.") paragraph 0095); and a second application storage manager server in communication with second media server via a second local area network(("at the same time a second content request is processed between a second TCP/UDP processing module and a second application processing module via a second switch fabric path.") paragraph 0081); and a second backup library in communication with the second application storage manager server for storing the information; wherein the second application storage manager server controls the movement of the information from the second disk storage array to the second backup library (("As illustrated in FIG. 1A, content sources may include, but are not limited to, one or more storage devices 1090 (magnetic disks, optical disks, tapes, storage area networks (SAN's), etc.), other content sources 1100, third party remote content feeds,

broadcast sources (live direct audio or video broadcast feeds, etc.), delivery of cached content, combinations thereof, etc. Broadcast or remote content may be advantageously received through second network connection 1023 and delivered to network 1020 via an accelerated flowpath through content delivery system 1010. As discussed below, second network connection 1023 may be connected to a second network 1024 (as shown). Alternatively, both network connections 1022 and 1023 may be connected to network 1020.") paragraph 0037).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a second processor layer comprising: a second media server, a second application storage manager server, and a second backup library as taught by Johnson et al. with a system wherein a second storage layer comprises a second disk storage array as taught by Padovano, as modified by Nishimura et al., for the purpose of accelerating data paths for storage systems.

Consider claim 13, and as applied to claim 12 above. Padovano, as modified by Nishimura et al., and as further modified by Johnson et al., discloses a system wherein a second disk storage array is in communication with a second backup library via a fiber channel (("Fibre channel-to-SCSI bridges may be used to allow SCSI devices to interface with fibre channel hubs and switches, and other fibre channel-ready devices. One or more of disk arrays 820, 822, 824, 828, 830, and 832 may instead be alternative types of storage devices, including tape systems, JBODs (Just a Bunch Of Disks), floppy disk drives, optical disk drives, and other related storage drive types.") column 8 lines 51-58).

Consider claim 14, and as applied to claim 12 above. Padovano, as modified by Nishimura et al., and as further modified by Johnson et al., discloses a system wherein a second disk storage array is in communication with a second application storage manager server via a fiber channel (("SAN server 302 comprises a first network interface 406, a second network interface 402, a SAN storage manager 404, a SAN server interface 408, and an operating system 410. FIG. 4 also shows an administrative interface 412, that is coupled to SAN server 302 through GUI communication link 426. Administrative interface 412 may be coupled to SAN server 302 if SAN server 302 is a primary SAN server for a SAN appliance (read as array).") column 16 lines 27-34).

Consider claim 15, and as applied to claim 12 above. Padovano, as modified by Nishimura et al., and as further modified by Johnson et al., discloses a system wherein a second backup library is in communication with a second application storage manager server via a fiber channel (("Arbitrated A shared 100 MBps Fibre Channel transport supporting up Loop to 126 devices and 1 fabric attachment. Fabric One or more Fibre Channel switches in a networked topology. HBA Host bus adapter; an interface between a server or workstation bus and a Fibre Channel network. Hub In Fibre Channel, a wiring concentrator that collapses a loop topology into a physical star topology. Initiator On a Fibre Channel network, typically a server or a work- station that initiates transactions to disk or tape targets. JBOD Just a bunch of disks; typically configured as an Arbitrated Loop segment in a single chassis. LAN Local area network; A network linking multiple devices in a single geographical location. Logical The entity within a target that executes I/O commands. For Unit example, SCSI I/O commands are

sent to a target and executed by a logical unit within that target. A SCSI physical disk typically has a single logical unit. Tape drives and array controllers may incorporate multiple logical units to which I/O commands can be addressed. Typically, each logical unit exported by an array controller corresponds to a virtual disk. LUN Logical Unit Number; The identifier of a logical unit within a target, such as a SCSI identifier. NAS Network Attached Storage; Storage elements that connect to a network and provide file access services to computer systems. A NAS storage element typically consists of an engine, which implements the file services, and one or more devices, on which data is stored. Point-to- A dedicated Fibre Channel connection between two point devices. Private A free-standing Arbitrated Loop with no fabric attachment. loop Public loop An Arbitrated Loop attached to a fabric switch. RAID Redundant Array of Independent Disks. SCSI Small Computer Systems Interface; both a protocol for transmitting large blocks of data and a parallel bus architecture. SCSI-3 A SCSI standard that defines transmission of SCSI protocol over serial links. Storage Any device used to store data; typically, magnetic disk media or tape. Switch A device providing full bandwidth per port and high-speed routing of data via link-level addressing. Target Typically a disk array or a tape subsystem on a Fibre Channel network. TCP Transmission Control Protocol; TCP enables two hosts to establish a connection and exchange streams of data; TCP guarantees delivery of data and also guarantees that packets will be delivered in the same order in which they were sent. Topology The physical or logical arrangement of devices in a networked configuration. UDP User Datagram Protocol; a connectionless protocol that, like TCP, runs on top of IP networks. Unlike TCP/IP, UDP/IP provides very

few error recovery services, offering instead a direct way to send and receive datagrams over an IP network. WAN Wide area network; a network linking geographically remote sites.") column 6 lines 7-54).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Padovano (US 6606690 B2) as modified by Nishimura et al. (US 7162597 B2) and in further view of Wisner et al. (US 20020163910 A1).

Consider claim 18, and as applied to claim 1 above. Padovano, as modified by Nishimura et al., discloses a first network comprising: a first processor layer; a first storage area network layer in communication with the first processor layer; and a first storage layer in communication with the first storage area network layer. However, Padovano, as modified by Nishimura et al., fails to disclose a system wherein a first network a gigabit Ethernet network. Wisner et al. discloses interface elements which permit various entities to interact using different types of protocols, such as Ethernet, Gigabit Ethernet, FDDI, ATM, etc. (("Each processing module may include a processor (e.g., a microprocessor), Random Access Memory (RAM), a PCI and/or EISA bus, and various I/O interface elements (e.g., provided by interface cards). These interface elements (not shown) permit various entities to interact with the file server 126 using different types of protocols, such as Ethernet, Gigabit Ethernet, FDDI, ATM, etc. Such connectivity is generally represented by links 382 shown in FIG. 3. Other interface elements (not shown) permit the file server 126 to communicate with the data storage unit 130 using different types of protocols, such as SCSI or fiber links. Such connectivity is generally represented by links 384 shown in FIG. 4.") paragraph 0051).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate interface elements which permit various entities to interact using different types of protocols, such as Ethernet, Gigabit Ethernet, FDDI, ATM, etc. as taught by Wisner et al. with a first network comprising: a first processor layer; a first storage area network layer in communication with the first processor layer; and a first storage layer in communication with the first storage area network layer as taught by Padovano, as modified by Nishimura et al., for the purpose of high performance iSCSI storage.

Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Padovano (US 6606690 B2) as modified by Nishimura et al. (US 7162597 B2) and in further view of Borthakur (US 7191225 B1).

Consider claims 19-20, and as applied to claim 1 above. Padovano, as modified by Nishimura et al., discloses a first network comprising: a first processor layer; a first storage area network layer in communication with the first processor layer; and a first storage layer in communication with the first storage area network layer. However, Padovano, as modified by Nishimura et al., fails to disclose a first network is a network free dedicated tape drive network or a server free tape backup network. Wisner et al. discloses SAN models that implement LAN-free and server-free tape backup, storage leasing, and full-motion video services (("The versatility of the SAN model enables organizations to perform tasks that were previously difficult to implement, such as LAN-free and server-free tape backup, storage leasing, and full-motion video services.") column 2 lines 45-48).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate LAN-free and server-free tape backup, storage leasing, and full-motion video services as taught by Wisner et al. with a first network comprising: a first processor layer; a first storage area network layer in communication with the first processor layer; and a first storage layer in communication with the first storage area network layer as taught by Padovano, as modified by Nishimura et al., for the purpose of data replication without server overhead.

Conclusion

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Mark Fearer
M.D.F./mdf
July 5, 2007

DAVID WILEY
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